

Microbial Diversity in Acute Apical Abscesses- An Overview

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Description

The most frequent type of dental abscess is acute apical abscess, which is caused by infection in the tooth's root canal. The apical abscess is normally localised intra-orally, but it can spread and cause serious complications or even death in some cases.

Bacteria can get into the interior part of your tooth through a deep cavity, a chip, or a crack. The infection and inflammation that occurs might lead to an abscess at the root's tip. A tooth abscess is a pus-filled pocket caused by a bacterial infection. An abscess can form in various regions of the tooth for a variety of causes. The genera *Fusobacterium*, *Parvimonas*, *Prevotella*, *Porphyromonas*, *Dialister*, *Streptococcus*, and *Treponema* are typically discovered in these illnesses. Advances in DNA sequencing and computational biology have greatly increased our understanding of the microbiota associated with acute apical abscesses and shed insights on the disease pathogenesis.

A periapical abscess (per-e-AP-ih-kul) forms at the root's tip, whereas a periodontal abscess (per-e-o-DON-tul) develops in the gums along the root's side.

An untreated dental cavity, an injury, or previous dental work are the most common causes of periapical tooth abscess.

A dental abscess will not go completely unless it is treated. The pain may go away if the abscess ruptures, but you'll still need dental care. The infection may spread to your jaw and other parts of your head and neck if the abscess does not drain. You could even have sepsis, a potentially fatal infection that spreads throughout your body.

Microbiology Diagnostic Methods

Culture

Culture methods have long been employed to study the microbiota of acute apical abscesses, and they have yielded a wealth of knowledge about the bacterial pathogenesis and species involved. However, due to certain serious restrictions in culture, obtaining a full characterization of the apical abscess

microbiota is difficult. Because anaerobic bacteria predominate in apical abscesses, samples for investigation or clinical diagnosis by culture should be obtained and transferred in temperatures that allow these bacteria to survive.

Molecular techniques

Without the requirement for cultivation, tools and processes based on molecular biology have been viable to overcome the constraints of culture and have significantly improved to produce a more realistic description of microbial communities in various environments.

For the study of bacteria in abscess samples, there are a variety of molecular approaches to choose from, and the methodology that is chosen is determined by the questions that need to be addressed. Molecular approaches for diagnostic microbiology can be used to identify all or the most prominent species in a sample (broad-range or open-ended analysis), or to profile the microbial community structure (community analysis).

Abscess samples can be collected from the impacted teeth's root canals or by aspirating the pus discharge from the swollen mucosa/skin for microscopic examination. The apical abscess microbiota is heterogeneous and dominated by anaerobic bacteria, according to culture and molecular microbiology research.

Many microbial and host-related features need to be clarified in order to enhance and expand our understanding of the genesis of acute apical abscesses and, as a result, improve preventive and therapeutic strategies for this pathologic and sometimes life-threatening condition.